



# CITY OF ENCINITAS

## CORRUGATED METAL PIPE (CMP)

### STORM DRAIN REHABILITATION

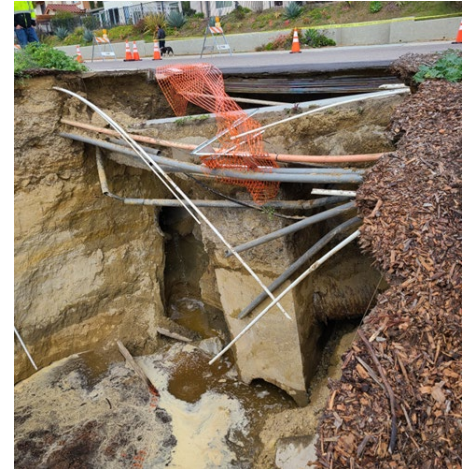
MATT WIDELSKI, P.E., QSD  
PRINCIPAL ENGINEER

LEIA CABRERA, P.E.  
SENIOR ENGINEER



# AGENDA

1. EXPLANATION OF CMP
2. EMERGENCY PROJECTS LAST WINTER
3. CURRENT EMERGENCY PROJECTS
4. FUTURE STORM DRAIN REHABILITATION PROJECTS



# CORRUGATED METAL PIPE (CMP)

PROS: Inexpensive, ease of installation, flexible, 50-year design life

CONS: Subject to corrosion → pipe failure → sinkholes

Options: Remove and replace OR rehabilitate/line



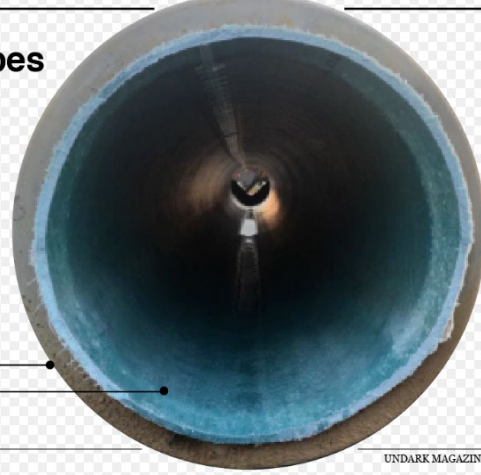
# CMP LINING TYPES

1. Cured In Place (CIP) Lining
2. Slip Lining

## Pipes Inside Pipes

Cured-in-place pipe, also known as CIPP, is one of several conduit repair technologies that are considered "trenchless" — that is, they don't require that old pipes be dug up and replaced. In CIPP, liners made of felt, fiberglass, or other composite tubes embedded with resin are inserted into the damaged pipes. Hot water or steam hardens, or "cures," the liner into a plastic conduit. During curing, plumes of materials can escape to the surface and into the air.

ORIGINAL CONDUIT  
CIPP LINER



# RECENT & CURRENT EMERGENCY PROJECTS



# CMP LINING COSTS

## COST TO LINE CMP STORM DRAIN LINES

-18-Inch Diameter CMP: \$400/LF

-24-Inch Diameter CMP: \$500/LF

-36-Inch Diameter CMP: \$750/LF

Not including Traffic Control, WPCP

# CMP LINING COSTS

- City executed Annual Storm Drain Lining Projects in 2015 & 2018
- City Fund CD05E receives \$250,000 annually to maintain
- CD05E just received \$500,000 July 2023
- City has Identified 124 CMP Storm Drain Lines Needing Maintenance
- Total estimated cost for all City CMP Lining: \$4,800,000**